

Quantum Mechanics II

Physics 424

Department of Physics at Lehigh University

Fall 2011

Instructor: Gary G. DeLeo

Office: 412 Lewis Lab, 83413 (direct), 83931 (Physics office), lgd0 (e-mail)

Text: None assigned, but see reverse side for suggested references

General Course Requirements:

Requirements include: (i) reading assigned materials prior to class, (ii) attending all lectures, (iii) completing all homework problems on time, (iv) seeing the instructor if you are having trouble.

Grading:

Your numerical grade will be determined as follows:

Exam 1	35%
Exam 2	35%
Homework	20%
Attendance	10%
TOTAL	100%

Tentative Topics:

- Foundations of Quantum Mechanics (Review)
- Angular Momentum
- Perturbation Theory
- Many-Body Systems
- Applications to Many-Electron Atoms
- Vibrating Systems
- Symmetry and Group Theory
- Applications to Molecular Systems
- Applications to Solid State Systems
- Scattering Theory

Accommodations for Students with Disabilities: If you have a disability for which you are or may be requesting accommodations, please contact both your instructor and the Office of Academic Support Services, University Center C212 (610-758-4152) as early as possible in the semester. You must have documentation from the Academic Support Services office before accommodations can be granted.

Textbooks and Reference Materials:

General...

Quantum Mechanics with Basic Field Theory, B. R. Desai, Cambridge (2009)

Quantum Mechanics, 3rd ed., E. Merzbacher, Wiley (1998)

Modern Quantum Mechanics, revised, J. J. Sakuri, Addison Wesley Longman (1994)

Quantum Mechanics, C. Cohen-Tannoudji, B. Diu, and F. Laloe, Vols. 1 & 2, Wiley (1977, 2006)

A Modern Approach to Quantum Mechanics, J. S. Townsend, McGraw Hill (1992)

Concepts in Quantum Mechanics, V. Mathur and S. Singh, CRC Press (2009)

Quantum Mechanics, L. I. Schiff, McGraw Hill (1968)

Quantum Mechanics (Two Volumes in One), A. Messiah, Dover (reprint 1999)

Quantum Mechanics, K. T. Hecht, Springer (2000)

Quantum Mechanics: A Modern Introduction, A. Das and A. C. Melissinos, Gordon and Breach (1986)

Atoms, Molecules, Symmetry...

Atoms and Molecules (Student Edition), M. Weisbluth, Academic Press (1978)

The Theory of Atomic Spectra, E. U. Condon and G. H. Shortley, Cambridge (1935, 1951, 1970)

Physics of Atoms and Molecules, B. H. Bransden and C. J. Joachain, Longman Group (1983, 1998)

Atomic Spectra and Atomic Structure, G. Herzberg, Dover (1937, 1944)

Quantum Theory of Atomic Structure, Vols. 1 & 2, J. C. Slater, McGraw Hill (1960)

Spectra of Atoms and Molecules, 2nd ed., P. Bernath, Oxford (2005)

Elementary Theory of Angular Momentum, M. E. Rose, Dover (1957, 1995)

Group Theory and Quantum Mechanics, M. Tinkham, McGraw Hill (1964)

A collection of relevant texts is located in a special section of the Reading Room.